IN THE CLAIMS:

Please CANCEL claims 5, 6, 15 and 16, without prejudice or disclaimer.

Please AMEND the claims as follows.

1. (CURRENTLY AMENDED) An optical amplifier comprising:

a first-stage optical amplifying unit and a second-stage optical amplifying unit arranged in series with respect to an optical signal, where a first pumping light is supplied to said first-stage optical amplifying unit at an output side of said first-stage optical amplifying unit as backward pumping light, and a second pumping light is supplied to said second-stage optical amplifying unit at an input side of said second-stage optical amplifying unit as forward pumping light,

a common automatic gain control circuit performing automatic gain control in accordance with the optical signal at an input side of the first-stage optical amplifying unit and the optical signal at an output side of said second-stage optical amplifying unit, and

a pumping light distribution function unit receiving a control signal from said common AGC circuit and, in accordance with the received control signal, supplying said first and second pumping lights with a predetermined distribution ratio,

wherein the predetermined distribution ratio causes an increased gain near an upper limit where oscillation occurs in said first-stage optical amplifying unit to thereby obtain a low noise figure, and causes fluctuation of output at said output side of said second-stage optical amplifying unit due to ASE to be suppressed when a number of input wavelengths of the optical signal at said input side of said first-stage optical amplifying unit rapidly decreases.

2. (PREVIOUSLY PRESENTED) An optical amplifier as set forth in claim 1, wherein said pumping light distribution function unit comprises:

a single pumping light source, and

an optical coupler for splitting pumping light from said single pumping light source with the predetermined distribution ratio into said first pumping light and said second pumping light, and supplying said first pumping light and said second pumping light to said first-stage optical amplifying unit and said second-stage optical amplifying unit, respectively.

3. (PREVIOUSLY PRESENTED) An optical amplifier as set forth in claim 1, wherein said pumping light distribution function unit comprises:

a first pumping light source providing said first pumping light,

a second pumping light source providing said second pumping light, and

a driving unit driving said first and second pumping light sources to match said predetermined distribution ratio.

4. (CANCELED)

5. (CANCELED)

6. (CANCELED)

7. (PREVIOUSLY PRESENTED) An optical amplifier as set forth in claim 1, wherein said optical amplifier is provided with at least three stages of optical amplifying units including an additional optical amplifying unit arranged in series with said optical signal, and two of said optical amplifying units are made to be said first-stage optical amplifying unit and said second-stage optical amplifying unit.

8. (PREVIOUSLY PRESENTED) An optical amplifier as set forth in claim 1, further comprising:

a distribution ratio control function unit able to change said predetermined distribution ratio.

9. (PREVIOUSLY PRESENTED) An optical amplifier as set forth in claim 8, wherein said distribution ratio control function unit is an optical attenuator able to change an intensity of at least one of said first pumping light and said second pumping light.

10. (PREVIOUSLY PRESENTED) An optical amplifier as set forth in claim 1, wherein

said first-stage optical amplifying unit comprises an optical amplifying medium through which the first pumping light travels to thereby amplify the optical signal as the optical signal travels through said optical amplifying medium, said optical amplifying medium of said first-stage optical amplifying unit being a rare earth-doped fiber or an optical waveguide, and

said second-stage optical amplifying unit comprises an optical amplifying medium through which the second pumping light travels to thereby amplify the optical signal as the optical signal travels through said optical amplifying medium, said optical amplifying medium of said second-stage optical amplifying unit being a rare earth-doped fiber or an optical waveguide.

11. (PREVIOUSLY PRESENTED) An optical amplifier as set forth in claim 7, wherein

said first-stage optical amplifying unit comprises an optical amplifying medium through which the first pumping light travels to thereby amplify the optical signal as the optical signal travels through said optical amplifying medium, said optical amplifying medium of said first-stage optical amplifying unit being a rare earth-doped fiber or an optical waveguide, and

said second-stage optical amplifying unit comprises an optical amplifying medium through which the second pumping light travels to thereby amplify the optical signal as the optical signal travels through said optical amplifying medium, said optical amplifying medium of said second-stage optical amplifying unit being a rare earth-doped fiber or an optical waveguide.

12. (CURRENTLY AMENDED) An optical amplifier comprising:

first and second optical amplifying mediums arranged in series so that an optical signal travels through the first optical amplifying medium and then through the second optical amplifying medium, wherein the first optical amplifying medium is supplied with backward pumping light so that the optical signal is optically amplified as the optical signal travels through the first optical amplifying medium, and the second optical amplifying medium is supplied with forward pumping light so that the optical signal is optically amplified as the optical signal travels through the second optical amplifying medium; and

an automatic gain controller causing the backward pumping light and the forward pumping light to be supplied to the first and second optical amplifying mediums, respectively, at a predetermined distribution ratio in accordance with the optical signal as detected at an input side of the first optical amplifying medium and the optical signal as detected at an output side of the second optical amplifying medium,

wherein the predetermined distribution ratio causes an increased gain near an upper limit where oscillation occurs in the first optical amplifying medium to thereby obtain a low noise figure, and causes fluctuation at the output side of the second optical amplifying medium due to ASE to be suppressed when a number of input wavelengths of the optical signal at the input side of the first optical amplifying medium rapidly decreases.

13. (PREVIOUSLY PRESENTED) An optical amplifier as set forth in claim 12, further comprising:

a pumping light source producing pumping light, and

an optical coupler splitting the pumping light produced by the pumping light source with the predetermined distribution ratio into the backward pumping light and the forward pumping

light, and supplying the backward pumping light and the forward pumping light to the first optical amplifying medium and the second optical amplifying medium, respectively.

14. (PREVIOUSLY PRESENTED) An optical amplifier as set forth in claim 12, further comprising:

a first pumping light source providing the backward pumping light,

a second pumping light source providing the forward pumping light, and

a driving unit driving the first and second pumping light sources to provide the backward pumping light and the forward pumping light at the predetermined distribution ratio.

15. (CANCELED)

16. (CANCELED)

17. (CURRENTLY AMENDED) An optical amplifier comprising:

first and second optical amplifying mediums arranged in series so that an optical signal travels through the first optical amplifying medium and then through the second optical amplifying medium;

means for supplying the first optical amplifying medium with backward pumping light so that the optical signal is optically amplified as the optical signal travels through the first optical amplifying medium, and for supplying the second optical amplifying medium with forward pumping light so that the optical signal is optically amplified as the optical signal travels through the second optical amplifying medium; and

means for causing the backward pumping light and the forward pumping light to be supplied to the first and second optical amplifying mediums, respectively, at a predetermined distribution ratio in accordance with the optical signal as detected at an input side of the first optical amplifying medium and the optical signal as detected at an output side of the second optical amplifying medium,

wherein the predetermined distribution ratio causes an increased gain near an upper limit where oscillation occurs in the first optical amplifying medium to thereby obtain a low noise figure, and causes fluctuation at the output side of the second optical amplifying medium due to ASE to be suppressed when a number of input wavelengths of the optical signal at the input side of the first optical amplifying medium rapidly decreases.